

RESPONSE UNDER 37 C.F.R. § 1.111
Serial Number: 09/863381
Filing Date: May 24, 2001
Title: CULTIVATED AGARWOOD

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REMARKS

Reconsideration and withdrawal of the rejections of the claims, in view of the remarks presented herein, is respectfully requested. Please cancel claims 43-47 without prejudice or disclaimer. Therefore, claims 1-42 are pending.

Interview Summary

Applicants thank Examiners Michelle Kizilkaya and Bruce Campell for courtesies extended during the telephonic interview conducted on September-10, 2003. Art references of record were discussed during the interview.

Information Disclosure Statements

The Office Action summary indicates that Forms 1449 from Applicant's filed Information Disclosure Statements were attached. However, Applicants' Representatives were unable to find the Forms 1449. Thus, Applicants respectfully request that initialed copies of the 1449 Forms that were submitted with the Information Disclosure Statement filed on August 7, 2001 and the Supplemental Information Disclosure Statement filed on May 22, 2002 be returned to Applicants' Representatives to indicate that the cited references have been considered by the Examiner.

The 35 U.S.C. § 102(b)/103(a) Rejection of Claim 42

The Examiner rejected claim 42 under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Rahman and Basak (Bano Biggyan Patrika, 9, 87-93 (1980)). This rejection is respectfully traversed.

The standard for anticipation is one of strict identity, and to anticipate a claim for a patent a single prior art source must contain all its elements. Hybritech Inc. v. Monoclonal Antibodies, Inc., 231 U.S.P.Q.2d 90 (Fed. Cir. 1986); In re Dillon, 16 U.S.P.Q.2d 1987 (Fed. Cir. 1990). Furthermore, there must be no difference between the claimed invention and the disclosure, as viewed by a person of ordinary skill in the art. Scripps Clinic & Res. Found. v. Genentech, Inc., 18 U.S.P.Q.2d 1001 (Fed. Cir. 1991).

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To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the cited reference itself or in the knowledge generally available to an art worker, to modify the reference so as to arrive at the claimed invention. Second, there must be a reasonable expectation of success, *i.e.*, that the invention would be operable. Finally, the prior art reference must teach or suggest all the claim limitations (M.P.E.P. § 2143). The teaching or suggestion to make the claimed invention and the reasonable expectation of success must both be found in the prior art, not in Applicant's disclosure (M.P.E.P. *citing with favor In re Vaeck*, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991)).

The present claims are directed towards a method of producing agarwood comprising forming an artificial wound into the xylem in an *Aquilaria* or *Gonystylus* tree, and providing a means for aerating the wound (claims 1-41), and to agarwood produced using such a method (claim 42). Agarwood, also known as agaru, is an aromatic resinous wood (*see*, for example, page 1, lines 11-15 and page 8, lines 10-13 of the present specification). Agarwood production involves specific types of aromatic resins to form in a reaction zone (*see*, for example, Example 11 of the present specification). Wounds in trees may produce discolored wood that in turn may lead to decay, but discolored and/or decayed wood formed in *Aquilaria* trees is not necessarily agarwood (See September 11, 2003 Declaration of Dr. Blanchette (hereinafter "Blanchette Declaration"), at ¶ 5. Moreover, "oleoresin" or "resin" produced in a tree in response to a wound is not always agarwood formation. *Id.* Only specific types of resin produced in some reactions produces the highly aromatic and valued agarwood. *Id.*

Rahman and Basak disclose the formation of discolored *Aquilaria agallocha* Roxb. wood, including white, brown, grey and greenish colored, and "oleoresin" production by the artificial wounding and inoculation of 52 year old forest *Aquilaria agallocha* Roxb. trees with three fungal isolates (abstract and Table 1 of Rahman and Basak). One of ordinary skill in the art at the time that the present application was filed would know that the authors of the Rahman and Basak paper erroneously called all discolored wood that was produced in their experiments "oleoresin." This error is clear from Tables 2 and 3 where no "oleoresin" was found in some of the samples.

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The Examiner is urged to consider that there is nothing in Rahman and Basak that teaches or suggests that this discoloration was agarwood. In fact, at page 92, Rahman and Basak state that

[t]he factors involved in wounding, which are important in agar deposition, are *not known* and work should be done to elucidate them. . . . More experimental work needs to be done before the generation of agar deposit is fully understood. There is no doubt that we *are still far from development of techniques* which would provide an assured supply of agar products for the industry of a quality that has been obtained hitherto in a very limited extent from the natural forest [emphasis added].

Rahman and Basak describe experiments that examined the role of wounding and fungal infestation in the formation of agar in the wood of *Aquilaria agallocha* trees (abstract). In the study, a number of holes were made in *A. agallocha* trees using a brace and bit (Materials and Methods, page 88, right column). Rahman and Basak state that the trees were located in the Lawachara forest near Srimangal, Sylhet, in Bangladesh. The holes received (a) a fungus; (b) a wooden plug; (c) 2% malt agar medium; or (d) nothing. Rahman and Basak refer to (b) and (c) as "closed controls" and to (d) as the "open control" (page 88, right column). The holes containing inoculants (a) and (c) were also filled with sterilized cotton and covered with polyethylene sheets.

It should be noted that *Aquilaria* trees have an unique physiology. See Blanchette Declaration at ¶ 3. In addition to having phloem around the circumference of the tree, *i.e.*, outside the vascular cambium layer, they have "included phloem." *Id.* The included phloem is found throughout the xylem of *Aquilaria* trees, and contains bundles of phloem. *Id.* These bundles can produce differentiating cells that can fill internal tree wounds with callus cells. *Id.* Thus, like other trees, *Aquilaria* can close an open wound with normal callus produced in the wounded cambium, but different from other trees can also form internal callus tissue. *Id.* In *Aquilaria* spp. trees grown in a tropical environment, such as the Lawachara forest, the "open control" of the Rahman and Basak study would have closed very rapidly by the formation of callus tissue from both inside and outside of the hole. Blanchette Declaration at ¶ 4.

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Therefore, Rahman and Basak provide no teaching or suggestion to an art worker that agarwood might be produced according to the claimed method, and withdrawal of the 35 U.S.C. § 102(b) and/or 35 U.S.C. § 103(a) rejection of claim 42 is respectfully requested.

The 35 U.S.C. § 103 Rejection of the Claims

The Examiner rejected claims 1-41 under 35 U.S.C. § 103(a) as being unpatentable over Rahman and Basak, in view of Blanchette and Gibson. In particular, the Examiner alleges that Rahman and Basak disclose a method for producing agarwood (page 3 of the Office Action). Also, according to the Examiner, both Blanchette and Gibson provide the motivation for repeated wounding of an Aquilaria tree (pages 5-6 of the Office Action). This rejection is respectfully traversed.

As discussed above, Rahman and Basak do not teach or suggest a method to produce agarwood. Rahman and Basak disclose that wounds made in trees produced a variety of discolored wood. However, Rahman and Basak disclose that much of the discolored wood had little to no oleoresin (Table 2). Moreover, Rahman and Basak do not disclose that a measurement of agarwood was performed. Instead, Rahman and Basak disclose that the presence of oleoresin was determined by visual examination of core sections (page 90). Based upon this, one of ordinary skill in the art would not conclude from Rahman and Basak that the development of discolored wood can be directly correlated with the presence of an oleoresin, let alone agarwood. Therefore, Rahman and Basak provide no teaching or suggestion to an art worker that agarwood might be produced according to the claimed method. Therefore, claims 1-41 are not obvious over Rahman and Basak.

Blanchette does not remedy the deficiencies of Rahman and Basak. First, Blanchette discloses changes in the anatomy of xylem in response to injury and fungal invasion, for example, the discoloration and the decay processes in temperate trees. (Blanchette at page 77). Aquilaria and Gonystylus trees (as recited in the pending claims), however, are not temperate trees and have a unique anatomy (specification at page 6, line 9; Blanchette Declaration at ¶ 3). Second, there is nothing in Blanchette that teaches or suggests a method for agarwood production. Blanchette discloses the anatomical response of xylem to injury and invasion by fungi, such as the discoloration of wood. Just because wood is discolored does not mean that

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agarwood has been produced. Blanchette Declaration at ¶ 5. Third, Blanchette does not teach or suggest re-wounding trees. Therefore, Blanchette does not teach that the re-wounding of an *Aquilaria* or *Gonystylus* tree would have any effect on the formation of agarwood in these trees. Thus, claims 1-41 are not obvious in view of Blanchette.

Gibson does not remedy the deficiencies of ~~Rahman and Basak~~, or the deficiencies of Blanchette. Gibson discloses the microscopic evaluation of four different samples of naturally occurring agarwood collected from the forest. Gibson further discloses that isolation of fungi from the wood. No experiments with wounding are disclosed by Gibson. Thus, there is nothing in Gibson that teaches or suggests the presently claimed method. Therefore, claims 1-41 are not obvious in view of Gibson.

Therefore, withdrawal of the 35 U.S.C. § 103(a) rejection of claims 1-41 over Rahman and Basak in view of Blanchette and Gibson is respectfully requested.

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Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney ((612) 373-6961) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743

Respectfully submitted,

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Date 11 September 2003

By

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I hereby certify that this paper is being transmitted by facsimile to the U.S. Patent and Trademark Office on the date shown below.

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